

Additions to the Orchid flora of Meghalaya, India^a

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Mots-clés/Keywords : *Bulbophyllum*, *Dendrobium*, *Oberonia*, Sacred grove/
Bois sacré.

Abstract

Dendrobium rotundatum (J.Lindley) G.Bentham ex J.D.Hooker, *Bulbophyllum forrestii* G.Seidenfaden and *Oberonia teres* A.F.G.Kerr are reported here as addition to the orchid flora of Meghalaya, India. The latter two are reported for the second time only from India. For each of the three taxa a detailed description, photographic illustration and distributional details are provided to facilitate easy and correct identification.

Résumé

Additions à la flore d'orchidées de Maghalaya (Inde) – *Dendrobium rotundatum* (J.Lindley) G.Bentham ex J.D.Hooker, *Bulbophyllum forrestii* G.Seidenfaden et *Oberonia teres* A.F.G.Kerr sont ici enregistrés pour la première fois à Maghalaya. Ce n'est, en outre, que la deuxième fois que les deux derniers sont cités pour l'Inde. Chacun des trois taxons fait l'objet d'une description morphologique détaillée, accompagnée de photographies et de détails sur sa distribution géographique, afin de faciliter son identification correcte.

Introduction

The Orchidaceae, one of the largest families of flowering plants, are represented by ca. 25,000 species under 800 genera distributed worldwide

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except Antarctica, whereby most species are distributed over the tropics and subtropics (Chen *et al.*, 2009). Misra (2007) reported 1,298 species, 5 subspecies and 28 varieties under 186 genera from India. Since then several new additions and new taxa have been described. Presently there are 1,378 species, 5 subspecies, 29 varieties and 2 formae under 186 genera in the country (Sanjappa & Singh, 2007; Sanjappa & Singh, 2008; Sanjappa & Singh, 2009; Singh & Singh, 2010; Singh *et al.*, 2011; Singh *et al.*, 2012; Singh & Dash, 2013; Verma *et al.*, 2014; Roy *et al.*, 2014; Chowlu *et al.*, 2014a; Chowlu *et al.*, 2014b; Murugan *et al.*, 2014; Mathew, 2014; Karthigeyan *et al.*, 2014; Nanda *et al.*, 2014), out of which about 363 species under 107 genera are found in Meghalaya (Kataki, 1986; Rao, 2007; Roy *et al.*, 2014; Verma *et al.*, 2014).

Meghalaya, one of the eight states of the north-east region of India, is geographically located between 25°0'00' N to 26°10'00' N and 89°45'00' E to 92°45'00' E. It is spread over an area of 22,429 km² and is part of the Indo-Myanmar Biodiversity Hotspot. The state supports diverse vegetation types viz. tropical, subtropical and temperate, and is rich in plant genetic resources including orchids.

During field explorations in the sacred groves and reserve forests of Jaintia Hills, Meghalaya, some interesting specimens were collected and identified with the help of relevant taxonomic literature and specimens housed at the herbarium of Botanical Survey of India, Eastern Regional Centre, Shillong (ASSAM). The collected species were found to be new reports to the flora of Meghalaya. Accordingly, three species are reported here for the first time from Meghalaya, of which two are of rare occurrence. Two of them are being reported only for the second time from India. The present communication provides their description including correct name, basionym, synonyms, photographic illustration and phenology for future reference and correct identification.

Taxonomic description

Dendrobium rotundatum (J.Lindley) G.Bentham ex J.D.Hooker, *Flora of British India* 5: 712 (1890); G.King & R.Pantling in *Annals of the Royal Botanic Gardens, Calcutta* 8: 62, t. 87 (1898).

Basionym:

Sarcopodium rotundatum J.Lindley, *Folia Orchidacea Sarcopodium* 2 (1853).

Synonyms:

Bolbophyllum rotundatum (J.Lindley) H.G.Reichenbach, *Annales Botanices Systematicae* 6: 244 (1861).

Callista rotundata (G.Bentham ex J.D.Hooker) C.E.O.Kuntze, *Revisio Generum Plantarum* 2: 655 (1891).

Epigeneium rotundatum (J.Lindley) V.S.Summerhayes, *Kew Bulletin* 12(2): 264 (1957); M.L.Banerji & B.B.Thapa in *Journal of the Bombay Natural History Society* 67(2): 148 (1970); S.Z.Lucksom, *Orchids of Sikkim and North East Himalaya* 591, t. 358 (2007); N.R.Pearce & P.J.Cribb, *Orchids of Bhutan* 431 (2002); X.Q.Chen & J.J.Wood in Z.Y. Wu *et al.*, *Flora of China* 25: 400 (2009).

Katherinea rotundata (J.Lindley) A.D.Hawkes, *Lloydia* 19: 97 (1956); N.P.Balakrishnan & S.Chowdhury in *Bulletin of the Botanical Survey of India* 8(3&4): 317 (1966).

Type: India, Sikkim, *J.D.Hooker* 24 (holo. K-LINDL).

Epiphytic herb; rhizome woody, creeping, sheathed, 5-6 mm thick; pseudobulbs narrowly ovoid, 2.4-3.5 × 1.1-1.5 cm, inserted at interval of 7-10 cm on the rhizome, covered by scarious sheaths; leaves 2, elliptic-oblong, 7.0-10.0 × 2.2-2.7 cm, sessile, glabrous, notched at apex; inflorescence 1-flowered; floral bract lanceolate, 2.5-2.9 × 0.7-1.2 cm, acute, membranous, persistent; flowers 3.0-3.4 cm across, pale yellowish brown; pedicel and ovary 2.2-2.6 cm long; dorsal sepal ovate-lanceolate, 2.2-2.8 × 0.8-1.0 cm, acute, 7-9 veined; lateral sepals falcate, ovate, 2.3-2.7 × 1.1-1.3 cm, acute, adnate to column foot, 7-veined; petals oblong-lanceolate, 2.2-2.5 × 0.6-0.7 cm, acuminate, 7-veined; labellum obovate-oblong in outline, 1.9-2.3 × 1.2-1.6 cm, sessile, 3-lobed, lateral lobes subovate, mid-lobe sub-reniform to obscurely 2-lobed, apex emarginate, margins thin, with a triangular thickening, disc 3-keeled, the median being much shorter; column curved, 0.9-1.1 × 0.4-0.5 cm, foot slightly winged, 0.8-0.9 × 0.5-0.6 cm; anther-cap oblong, ca. 2.3 × 1.8 mm, creamy yellow; pollinia 4, in pairs, ca. 1.2 × 0.5 mm long, yellow. Fig. 1.

Flowering: April-May.

Habitat: epiphytic on tree trunks.

Specimen examined: INDIA, Meghalaya, Jaintia hills, Tuber sacred grove, 25°26'05.31"N & 92°16'25.05"E, 1,364 m, 15.04.2014, *D.Verma* 305 (LWU).

Distribution: India (Meghalaya, Sikkim, West Bengal, Nagaland, Arunachal Pradesh), Nepal, Bhutan, China, Myanmar.

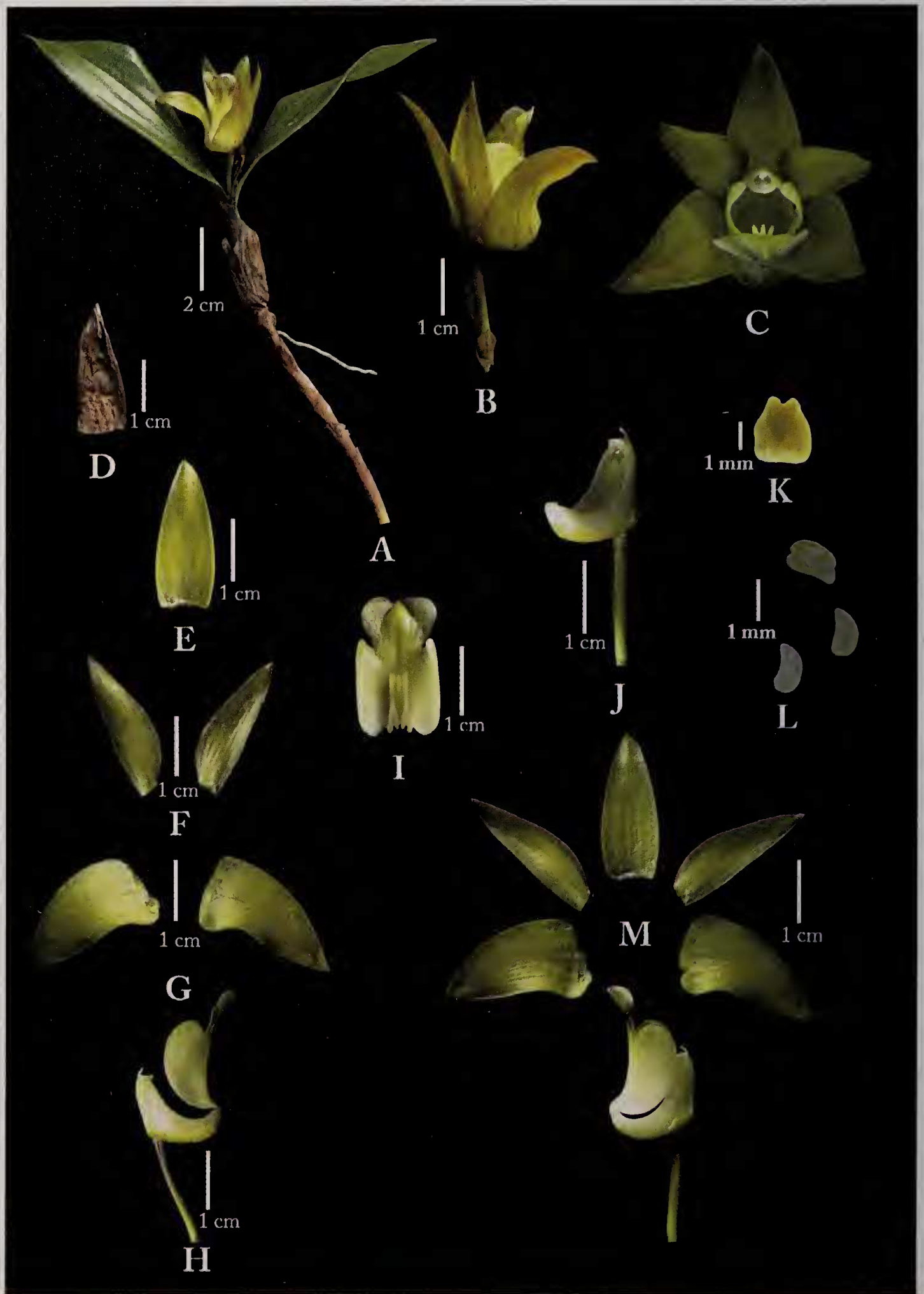


Fig. 1: *Dendrobium rotundatum*

A. Flowering twig, B. Flower (lateral view), C. Flower (front view, not to scale), D. Floral bract, E. Dorsal sepal, F. Petals, G. Lateral sepals, H. Labellum, column, pedicel and ovary, I. Labellum, J. Column, pedicel and ovary, K. Anther cap, L. Pollinia, M. Floral analysis.

Bulbophyllum forrestii G.Seidenfaden, *Dansk Botanisk Arkiv* 29(1): 120 (1973); G.Seidenfaden, *Orchid Genera in Thailand VIII* 165 (1979); I.C.Barua, *Orchid flora of Kamrup district, Assam* 142, t. 45 (2001); J.Augustine *et al.*, *Orchids of India-II: Biodiversity and status of Bulbophyllum Thou.* 45 (2001); X.Q.Chen & J.J.Vermeulen in Z.Y.Wu *et al.*, *Flora of China* 25: 428 (2009).

Basionym:

Cirrhopetalum aemulum W.W. Smith, *Notes from the Royal Botanic Garden, Edinburgh* 13(63–64): 195 (1921).

Synonym:

Rhytionanthos aemulum (W.W. Smith) L.A.Garay, F.Hamer & E.S.Siegerist, *Nordic Journal of Botany* 14: 637 (1994).

Type: China, Yunnan, Shweli Valley, *G.Forrest* 8130 (holo. K).

Epiphytic herb; rhizome creeping, 4-5 mm in diameter; pseudobulbs ovoid, tapering towards the apex, 4-5 × 1.4-1.8 cm, unifoliate, covered with fibrous sheath, at intervals of 0.6-1.0 cm along the rhizome; leaves oblong, 12-20 × 1.6-2.3 cm, glabrous, coriaceous, apex obtuse, emarginate, petiole 1.3-2.8 × 0.3-0.4 cm; inflorescence basal from the pseudobulbs, erect, shorter than the leaves, sub-umbellate, 8-10 flowered, 12-16 cm long; peduncle erect, glabrous, yellowish green, streaked with purple, sheathed; sheaths 2, distant, tubular, lanceolate, 0.8-1.1 cm long; floral bracts linear, acute, 0.5-0.7 × 0.1-0.2 cm; pedicel & ovary greenish yellow, 0.8-1.2 cm long; flowers yellow-pale orange, tinged with purple, sepals and petals pale orange, purple tinged along the nerves and margins; dorsal sepal ovate, 6-7 × 3.0-3.5 mm, 5-6 nerved, concave, apex acute, margin entire; lateral sepals obliquely lanceolate 1.5-1.8 × 0.30-0.35 cm, 5-nerved, entire, base adnate to column foot and twisted above it, gradually narrowed and connate more than half of their length towards the tip forming a conical tube, apex acuminate; petals ovate-triangular, 2.0-3.0 × 1.5-2.0 mm, 3-nerved, irregularly denticulate, apex acute; labellum lanceolate, 3.0-3.5 × ca. 1.0 mm, obscurely 3-lobed, narrowed above the middle, attached to the base of the column foot, mobile, margin decurved, minutely papillate, apex acuminate; column 2.0-2.5 mm long, stelidia 2, caudate, ca. 0.5 mm long, foot upcurved, free part ca. 2 mm, truncate at apex; anther cap subglobose, ca. 1 mm in diameter, creamy yellow, tinged with purple; pollinia 4, in 2 pairs, ca. 0.5 mm long, dull yellow. (Fig. 2).

Note: This species is very much similar to *Bulbophyllum helenae* (C.E.O.Kuntze) J.J. Smith, but differs mostly in the erose dorsal sepal found in *B. helenae* and the entire margin dorsal sepal of *B. forrestii*.

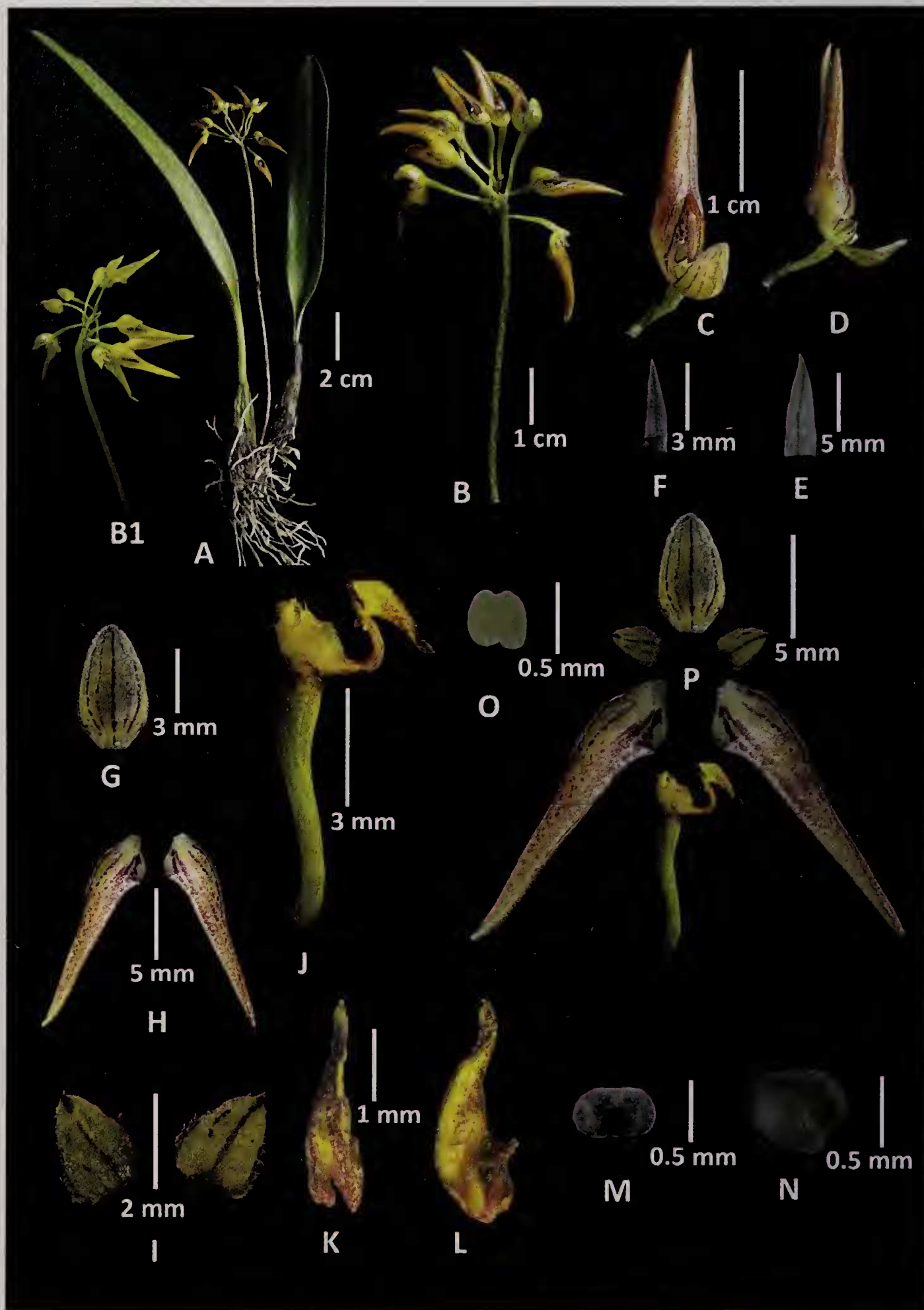


Fig. 2: *Bulbophyllum forrestii*

A. Habit, B. Inflorescence, B1. Inflorescence (different colour form), C & D. Flower, E. Peduncle bract, F. Floral bract, G. Dorsal sepal, H. Lateral sepals, I. Petals, J. Labellum, column, pedicel and ovary, K. Labellum (dorsal view), L. Labellum (lateral view), M. Anther cap (dorsal view), N. Anther cap (ventral view), O. Pollinia, P. Floral analysis.

Flowering: July-August.

Habitat: epiphytic on tree trunks.

Specimen examined: INDIA, Meghalaya, Jaintia hills, Tuber sacred grove, 25°26'22.13"N & 92°16'20.56"E, 1338 m, 12.07.2014, *D.Verma* 328 (LWU).

Distribution: India (Meghalaya, Assam), China, Myanmar, Thailand and Laos.

Oberonia teres A.F.G.Kerr, *Bulletin of Miscellaneous Information Kew* 1927: 214. (1927); G.Seidenfaden, *Dansk Botanisk Arkiv* 33(1): 10 (1978); S.Phukan & A.A.Mao, *Orchid Review* 110: 160 (2002); J.X.Hua *et al.*, *Acta Phytotaxonomica Sinica* 45(6): 805 (2007).

Type: Thailand, Mêt Tun, Chiangmai, *A.F.G.Kerr* 484 (holo. K).

Epiphytic herb; stem very short; leaves 3-4, distichous, terete, 1.2-2.1 × 0.4-0.5 cm, acuminate; inflorescence 1.0-1.4 cm long, scape covered with subulate bracts, spike 0.8-1.0 cm long, many flowered; floral bracts lanceolate, 1.2-1.4 × 0.65-0.70 mm, acuminate, subentire; flowers minute, 1.5 mm across, shortly pedicelled, yellowish green; sepals ovate, 0.65-0.70 × 0.70-0.75 mm, acute, entire, reflexed; petals linear, 0.75-0.80 × 0.25-0.28 mm, entire, reflexed; labellum suborbicular, 3-lobed, concave, sparsely dotted with glands, edges irregularly toothed, 1.2-1.3 mm in diameter, lateral lobes small, 0.20-0.23 mm long, mid-lobe rounded, 0.90-0.98 mm long, apex bilobed; column ca. 0.45 × 0.50 mm; pollinia ovoid-triangular, 0.15-0.17 mm. (Fig. 3).

Flowering: June-July.

Habitat: epiphytic on tree trunks.

Specimen examined: INDIA, Meghalaya, Jaintia hills, Mukhaialong sacred grove, 25°23'49.26"N & 92°15'08.60"E, 1250 m, 28.06.2014, *D.Verma* 413 (LWU).

Distribution: India (Meghalaya, Manipur), China, Thailand and Vietnam.

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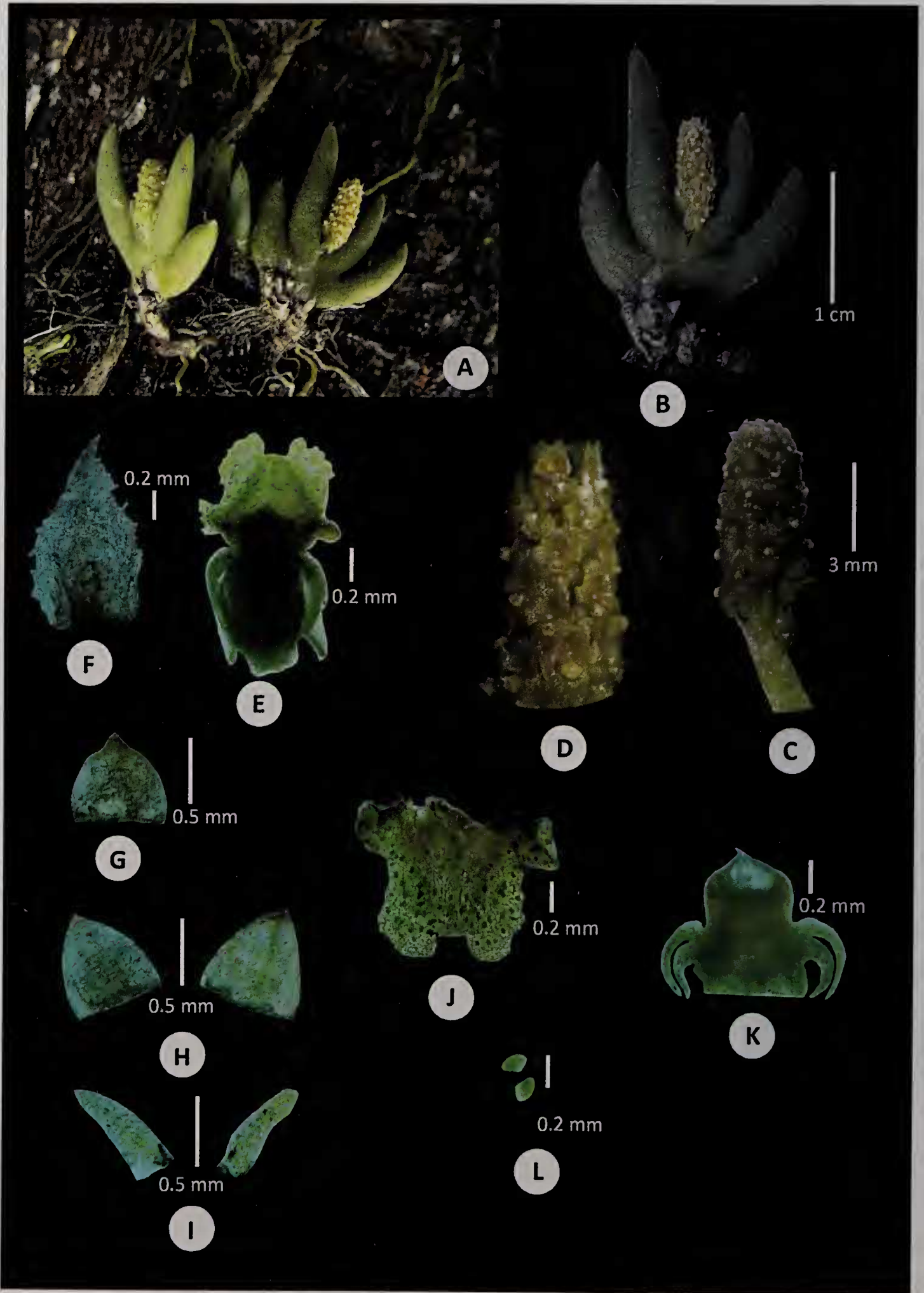


Fig. 3. *Oberonia teres*

A. & B. Habit, C. Inflorescence, D. A portion of inflorescence under microscope, E. Flower, F. Floral bract, G. Dorsal sepal, H. Lateral sepals, I. Petals, J. Labellum, K. Column with petals and lateral sepals, L. Pollinia.

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